

Office of Research and Development Invasive Species Research

Daniel Kluza

Ecologist

U.S. EPA Office of Research and Development (ORD)/National Center for Environmental Assessment (NCEA)/Washington Division

(202) 564-3374

kluza.daniel@epa.gov

Authors: Daniel Kluza

U.S. EPA NCEA/Washington Division

Keywords: invasive species, ecology, forecasting, ecosystem, risk assessment

Non-native invasive species (NIS) are a serious threat to global biodiversity, capable of disrupting the structure and function of ecosystems, altering the quality and availability of ecosystem goods and services upon which society depends, imposing risks to human health, and effecting socioeconomic costs. Zebra mussels, for example, compete with native bivalves, alter water quality, and can foul human infrastructure, such as intake pipes for drinking water and irrigation. Aquatic weeds, such as hydrilla and Eurasian watermilfoil, can form dense mats that choke off waterways and alter water chemistry. Given their potential and realized effects as stressors on human health and the environment (e.g., water quality), NIS are of increasing concern within the Agency. Proactive anticipatory efforts are critical to effective NIS management and, for this reason, the ORD has been participating in collaborative research toward developing tools and guidance for prevention and forecasting. These efforts have been focused toward topical issues, such as identifying ecosystem characteristics and stressors that influence vulnerability to invasion (National Risk Management Research Laboratory/Oklahoma State University/U.S. Geological Survey; National Exposure Research Laboratory/Michigan State University), and predicting the identity and potential geographic distributions of future invasive species (NCEA/USGS; NCEA/University of Kansas). The ORD's collaborative research has furthered the development of NIS management and risk assessment tools for conceptual modeling of potential ecological effects, predictive modeling of species occurrence, and landscape-level monitoring efforts. Emerging issues that will guide the ORD's future research include integrating early detection efforts with the U.S. Environmental Protection Agency (U.S. EPA) compliance monitoring, forecasting potential NIS water quality and socioeconomic impacts, and identifying restoration and mitigation practices that minimize the risk of NIS establishment and spread.

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